IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	William RUSSELL II et al.	Art Unit:	3714
Appl. No.:	10/677,239	Examiner:	Kesha Frisby
Filed:	October 3, 2003	Conf.:	9110
For:	METHOD FOR PREDICTED REACTOR SIMULATION		
Docket No.:	24GA5997 (8564-000043/US)		

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APPELLANTS' REPLY BRIEF UNDER 37 C.F.R. § 41.41

Madam:

In response to the Examiner's Answer mailed January 16, 2009, Applicants request the appeal be maintained and supply the following arguments in reply under 37 C.F.R. § 41.41(a)(1).

I. STATUS OF CLAIMS:

Applicants acknowledge the Examiner's status of the claims in her Answer is correct. Claims 1-34 are pending and currently stand rejected. Claim 35 has been cancelled. Claims 1, 19, and 34 are independent claims. The claims are rejected as follows:

1. Claims 1-4, 6-21, and 23-34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by EP Pub 1113457 to Russell ("Russell").

2. Claims 5 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Russell in view of US Pat 3,919,720 to Alliston ("Alliston").

3. Claims 1-34 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Claims 1-34 are being appealed.

II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

Appellant seeks the Board's review of the following rejections:

1. The rejection to claims 1-4, 6-21, and 23-34 under 35 U.S.C. § 102(b) as being anticipated by EP Pub 1113457 to Russell ("Russell").

2. The rejection to claims 5 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Russell in view of US Pat 3,919,720 to Alliston ("Alliston").

3. The rejection to claims 1-34 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

   Claims 1-34 rise and fall together.

III. ARGUMENT

A. The Examiner's interpretation of the recited "receiving user input" is unreasonably broad.

In response to the Applicants' argument that the limitation of claim 1, "receiving user input including values of one or more design input variables previously used in creating an existing response surface," is not taught or suggested by Russell, the Examiner answers that "receiving user input" can be new center-point data automatically fed back into the system of Russell. *See* Examiner's Answer mailed January 16, 2009 ("Answer"), pp. 8-9. Applicants respectfully submit that nothing in Russell teaches or suggests that the new center-point data is user input. Russell receives **user input of design input variables** only before creation of a response surface; the user input is later used to create the response surface itself. *See* Russell Col. 9, ll. 43-51; FIG. 2, element 201; Col. 12, ll. 1-6; Col. 13, ll. 44-51; Col. 14, ll. 6-11. Where Russell feeds back new center-point data including design variable values, this new center-point data is not user input but generated from an internal polynomial optimization and evaluation module. *See* Russell, Col. 11, ll. 15-27.

To interpret this fed-back data as user input is unreasonable. Russell identifies data input by the user/operator explicitly as "user-input information" or "operator-inputted data" (see first Russell cite above) and does not label this fed-back data as user input. Further, nothing in Russell suggests or teaches how to crack open Russell's fed-back data loop shown in FIG. 2 of Russell and insert user input of design input variables instead, as would be required by claim 1. Thus, the broadest reasonable interpretation of "receiving user input including values of one or more design input variables previously used in creating an existing response surface" does not include receiving automatically fed-back data without user input, as disclosed by Russell.

Because the Examiner must unreasonably interpret claim language for Russell to disclose each and every feature of claim 1, Applicants respectfully maintain their request that the Board overturn the rejections over Russell to claims 1-11.

B. Claims 1-34 transform data that clearly represents physical and tangible objects.

The Examiner enters a new ground of rejection to pending claims 1-34 under 35 U.S.C. § 101. Particularly, the Examiner alleges that claims 1-34 are directed to non-statutory subject matter because they are process claims not tied to a particular machine or apparatus and not transforming any underlying subject matter to a different state or thing. Applicants respectfully request the Appeal be maintained with respect to this new ground of rejection and offer the following arguments for the Board's reversal of the same.

In rejecting claims 1-34 under 35 U.S.C. § 101, the Examiner applies the machine-or-transformation test as recently articulated by the Federal Circuit in In re Bilski, No. 2007-1130, slip op. at 32 (Fed. Cir. 2008). Applicants respectfully submit that the Federal Circuit, in Bilski, specifically approved claim 6 from In re Abele under § 101, reproduced here:

> 5. A method of displaying data in a field comprising the steps of calculating the difference between the local value of the data at a data point in the field and the average value of the data in a region of the field which surrounds said point for each point in said field, and
> displaying the value of said difference as a signed gray scale at a point in a picture which corresponds to said data point.
>
> 6. The method of claim 5 wherein said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner.

See Bilski at 25-26; In re Abele, 684 F.2d 902, 908 (C.C.P.A. 1982). In sanctioning claim 6's patent eligibility, the Federal Circuit stated that "transformation of . . . raw data into a particular visual depiction of a physical object on a display was sufficient to render [a] process patent-eligible" and that "the claim was not required to involve any transformation of the underlying physical object that the data represented." Bilksi at 25. That is, the identification in claim 6 of the physical structure represented by the data rendered transformation and display of such data patent-eligible.

Here, claims 1, 19, and 34 transform data representing particular physical objects – power plant controls - and output the transformed data in a visual form – a reactor simulation. The specification explicitly discloses design inputs as independent control variables representing operational controls that may be directly modified by plant operators, including for example, a control rod positioning in the nuclear core. *See, e.g.*, specification as filed, p. 1, ll. 10-18; claim 3. The specification further discloses that all reactor simulation may be displayed in one of several different visual formats, analogous to the required degree of data output recited in claim 6 of Abele. *See, e.g.*, specification as filed, p. 28, ll. 2-19. The simulation includes operational outputs representing physical core conditions, such as peak fuel rod exposure, under the circumstances simulated. *See, e.g.*, specification as filed p. 9, ll. 17-24; claim 4. Thus, claims 1, 19, and 34 recite the input of data representing discreet physical objects and the transformation and output of that data in a simulation representing the resulting nuclear power plant physical conditions.

Because claims 1, 19, and 34 recite processes that transform data representing physical objects into tangible output, claims 1, 19, and 34 are directed to statutory processes under § 101. Claims 2-18 and 20-33 are allowable at least for depending from an allowable base claim. Claims 3 and 4 recite specific types of power plant controls, such as water flow through the core, and specific types of operational outputs, such as peak fuel rod exposure, and as such are *a fortiori* directed to statutory subject matter. Reversal of the rejection to claims 1-34 under 35 U.S.C. § 101 is respectfully requested.

IV. CONCLUSION

Appellants respectfully maintain their request that the Board reverse the Examiner's rejections of the pending claims 1-34.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,
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